

What is claimed is:

1. A process for manufacturing a composite polymeric circuit protection device, said process comprising

- (1) providing a polymeric assembly comprising
  - (a) providing first and second laminates, each of which comprises a laminar polymer element having at least one conductive surface,
  - (b) providing a pattern of conductive material on at least one of the conductive surfaces on one laminate;
  - (c) securing the laminates in a stack in a desired configuration, at least one conductive surface of at least one of the laminates comprising an external conductive surface of the stack,
  - (d) making a plurality of electrical connections between a conductive surface of the first laminate and a conductive surface of the second laminate, and
  - (e) attaching a plurality of electrical components to the external conductive surface of the stack; and
- (2) subdividing the assembly into individual devices each of which comprises (i) at least one electrical connection, and (ii) at least one electrical component.

2. A process according to claim 1 wherein the assembly comprises two external conductive surfaces and electrical components are attached to both external conductive surfaces.

3. A process according to claim 1 wherein the electrical component is attached to a permanent electrical connection pad.

4. A process according to claim 3 wherein the electrical connection pad comprises a solderable material.

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5. A process according to claim 1 wherein the electrical component is attached to a reconnectable contact pad.

6. A process according to claim 5 wherein the reconnectable contact pad comprises hard gold, palladium, or palladium nickel alloy.

7. A process according to claim 1, wherein an additional conductive layer is added to at least part of at least one of the external conductive surfaces to form the electrical connection pad or the reconnectable contact pad.

8. A process according to claim 1 wherein the laminar polymer element in the first laminate comprises a PTC conductive polymer composition.

9. A process according to claim 8 wherein the laminar polymer element in the second laminate comprises a dielectric material.

10. A process according to claim 9 wherein the assembly further comprises a third laminate which comprises a laminar element which is a dielectric, the second and third laminates positioned on the top and bottom of the first laminate.

11. A process for manufacturing a composite polymeric circuit protection device, said process comprising

(1) providing a polymeric assembly comprising

- (a) providing first and second laminates, each of which comprises a laminar polymer element having at least one conductive surface,
- (b) providing a pattern of conductive material on at least one of the conductive surfaces on one laminate;
- (c) securing the laminates in a stack in a desired configuration, at least one conductive surface of at least one of the laminates comprising an external conductive surface of the stack,

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- (d) making a plurality of electrical connections between a conductive surface of the first laminate and a conductive surface of the second laminate;
- (2) subdividing the assembly into individual devices each of which comprises at least one electrical connection; and
  - (3) attaching at least one electrical component to an external conductive surface of each device.
12. A process according to claim 11 wherein the laminar polymer element in the first laminate comprises a PTC conductive polymer composition.
13. A process according to claim 12 wherein the laminar polymer element in the second laminate comprises a dielectric material.
14. A process according to claim 13 wherein the assembly further comprises a third laminate which comprises a laminar element which is a dielectric, the second and third laminates positioned on the top and bottom of the first laminate.
15. A process for manufacturing a composite polymeric circuit protection device, said process comprising

- (1) providing a polymeric assembly comprising
  - (a) providing a first laminate which comprises a laminar polymer element comprising a conductive polymer composition, said laminar polymer element having at least one conductive surface,
  - (b) providing a second laminate which comprises a laminar polymer element comprising an insulating polymer composition, said laminar polymer element having at least one conductive surface,
  - (c) providing a pattern of conductive material on at least one of the conductive surfaces on one laminate;

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- (d) securing the laminates in a stack in a desired configuration, at least one conductive surface of at least one of the laminates comprising an external conductive surface of the stack,
  - (e) making a plurality of electrical connections between a conductive surface of the first laminate and a conductive surface of the second laminate, and
  - (f) providing an additional conductive layer on at least part of at least one of the external conductive surfaces to form an electrical connection pad or a reconnectable contact pad; and
- (2) subdividing the assembly into individual devices each of which comprises (i) at least one electrical connection, and (ii) at least one electrical connection pad or reconnectable contact pad.
16. A process according to claim 15 wherein each device comprises at least one electrical connection pad on one external surface and at least one reconnectable contact pad on the other external surface.

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